Contract Choice: Efficiency and Fairness in Revenue Sharing Contracts*

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Alexandros Karakostas
Department of Economics, University of Erlangen-Nuremberg, Nuremberg, 90403, Germany, alexandros.karakostas@fau.de

Axel Sonntag
Vienna Center for Experimental Economics, University of Vienna, Vienna, Austria, axel.sonntag@univie.ac.at

Daniel John Zizzo
Behavioural and Experimental Northeast Cluster (BENC) and Newcastle University Business School, Newcastle University, Newcastle upon Tyne, UK, daniel.zizzo@ncl.ac.uk

Abstract

We present a simple principal-agent experiment in which the principals are allowed to choose between a revenue sharing, a bonus and a trust contract, to offer to an agent. Our findings suggest that a large majority of experimental subjects choose the revenue sharing contract. This choice not only turns out to be the most efficient but at the same time is fair. Overall, the distribution of earnings is only mildly skewed towards the principal. We conclude that under revenue sharing contracts concerns for fairness can go in hand with the use of monetary incentives.

Keywords: efficiency, fairness, revenue sharing, trust, moral hazard

JEL Classification: C91, J41, M52

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I. Introduction

This paper employs an experiment to compare how principals choose among three different contract types: revenue sharing contracts, bonus contracts and trust contracts. Contract choice is clearly important from the perspective of the efficiency of any transactions that involves principals and agents, and yet to our knowledge only a limited number of experimental studies directly compare different types of contracts, and none has looked at the combinations of contracts we consider. We find revenue sharing contracts a particularly useful contract to consider as part of the menu of choices offered to the principal. Revenue sharing contracts are used extensively in sharecropping (Allen and Lueck, 1992), the video rental industry (Dana and Spier, 2001), gate revenue sharing in sports (Szymanski and Kesenne, 2004), law, accounting and architecture firms (Greenwood and Empson, 2003), among other professions. These are evidently contracts of potentially general interest.

In a trust contract, the principal pays a fixed wage to the agent and requests an effort level. As the fixed wage is paid before the agent decides on an effort level he has no incentive for exerting the requested effort. In the bonus contract, in addition to the fixed wage and requested effort, the principal announces a voluntary bonus she is willing to pay if the exerted effort is equal to or exceeds the requested effort. As this announcement is not binding, there is still no incentive to exert effort. However, Fehr et al. (2007) find that when offered the choice between an enforceable monitoring contract and a non-enforceable bonus contract, most principals (roughly 90%) preferred the bonus contract. Additionally, the effort exerted by the agents and the average payoff for both the principals and the agents were higher in bonus contract than in monitoring contract settings (Fehr et. al., 2007). Fehr et al.'s (2007) interpretation of their findings is that

the bonus contract was preferred to the monitoring contract due to fairness concerns. It is possible however that a contract that contained the opportunity of fining could have been perceived as a hostile act itself and might send the agent a signal of distrust (see Dickinson and Villeval, 2008; Fehr and Rockenbach, 2003; and Frey, 1998).[1] This in turn could have increased the likelihood to shirk by generating a self-fulfilling prophecy of distrust (see Bacharach et al., 2007). In contrast, in an experiment employing revenue sharing contracts, where a principal defines a fixed wage and additionally offers the agent a share of the total (gross) revenue, Anderhub et al. (2002) found that principals "clearly recognize the agency problem and react accordingly" (p.24) by developing incentive compatible and profit maximizing contracts; however, a significant proportion of the principals also take concerns of fairness into account in the sense of providing larger than the predicted shares of the total revenue to the agents. In principle, a contract that *ex ante* reduces the risk for the principal could be quite attractive to a risk averse principal, and contracts based on revenue sharing or bonuses would not have the negative connotations of distrust of a monitoring contract with fines.

Our experiment builds on the work of Anderhub et al. (2002) and Fehr et al. (2007) by providing principals the option to choose among a revenue sharing contract, a bonus contract or a trust contract.[2] The trust and bonus contracts we used are similar to those in Fehr et al. (2007). In the revenue sharing contract a principal defines a non-negative fixed wage and additionally offers the agent a share of the total (gross) revenue. The revenue sharing contract implicitly assumes that effort and revenue are observable and verifiable. Although, under such circumstances, it would also be possible to write a 'forcing contract' which requires agents to exert the efficient

[1] More generally, the contract choice may provide important information to the employee regarding the employer (e.g. Falk and Kosfeld, 2006) or even the behavior of other employees (Danilov and Sliwka, 2013), which in turn may have either positive or negative effects on the intrinsic motives of agents. Bowles and Polania-Reyes (2012) provide a systematic review of what they identify as the four crowding out mechanisms of intrinsic incentives.

[2] As discussed more below, the trust contract may be seen as a special case of both the bonus and the revenue sharing contracts. However, we chose to present it as an explicit option to control for any potential pressure the principals may have felt on using all the mechanisms available in each contract (given they have chosen it).

effort level and punish them severely if they would deviate, offering such a contract may be perceived as a signal of distrust by the agents (irrespective of the preferences of the principal).[3] The revenue sharing contract allows fairness concerns to be expressed by offering a generous share of the total revenue to the agent. Hence, a principal can express social preferences in both the bonus contract and the revenue sharing contract if he or she chooses to do so.

Our key finding is that principals tend to choose revenue sharing contracts over alternatives, in both one-shot and repeated games, and the revenue sharing contracts that they choose make agents on average no worse off in absolute terms than if a different contract had been chosen. In relative terms, agents overall received as much as 47% of the earnings. In the repeated games, switches from bonus contract or trust contracts to revenue sharing contracts are Pareto superior for a majority of both principals and agents. Therefore, efficiency and fairness complement each other.[4]

Our results are, in spirit, connected to Chan (2006), who presented a trust game experiment showing that both efficiency and equity can matter, and to Güth et al. (1993), who devised a multi-period ultimatum game where efficiency and fairness can complement each other. Undoubtedly there are contexts where the tension rather than complementarity between efficiency and fairness is a real one (e.g. Ackert et al., 2007, and Bone et al., 2004). Our claim of complementarity is one that applies to a contract design environment where revenue sharing is an option.

The remainder of this article is structured as follows: section 2 presents the theoretical predictions, the experimental design and the hypotheses. Section 3 provides the results of the experiment. Section 4 offers a discussion of the results and section 5 concludes. Online

[3] See Bowles and Polania-Reyes (2012) for a review of crowding out mechanisms on preferences.

[4] While following a different approach, there is some parallelism with Murdock (2002), who presents a model combining intrinsic incentives and efficiency in contract design. Conversely, Prendergast (2008) suggests selecting agents by their preferences. Other researchers have pointed out that monetary incentives might work, but that their effectiveness depends on the degree of the agents' intrinsic motivation (Boly, 2010) or the size of the monetary incentives (James, 2005).

appendices include more details on experimental parameters and predictions (appendix A), experimental instructions (B) as well as more experimental results and further econometric analysis (C, D and E).

II. Experimental Design and Hypotheses

Experimental Design

In our experiment a principal, *the employer*, hires an agent, *the employee*, to carry out production. For every unit of effort e the agent exerts, the principal receives 150 Experimental Currency Units (ECU). In other words, the total revenue is given by $R(e) = 150 * e$. The agent bears an effort cost of $C(e) = e + e^2$ with $e \in \{0,1, \dots ,19,20\}$. Subjects have a fixed role of either principals or agents, and this was common knowledge. The experiment is divided in 5 games and has 10 rounds in total. In each round both the principal and the agent receive initial endowments of 3000 ECU. The purpose of the endowments was to ensure that neither the agent nor the principal could make any losses. The differences across games are in the type of employment contract the principal can offer to the agent, i.e. a *trust contract*, a *bonus contract*, a *revenue sharing contract* or a choice among the three, and whether the game is repeated (which allows for reputation building) or one-shot. In each game principals are matched with a different agent, and this is also common knowledge. Games are in one of two possible orders, described in Figure 1, and are explained below.

[Insert Figure 1 about here]

In an exogenous trust contract setting (TC-ex) the principal chooses the size of a fixed wage F, where $F \in \{0,1, \dots ,2999,3000\}$, and suggests an effort level to the agent which is not binding. Then the agent is informed about the offered contract and decides to accept or reject the contract. If the contract is rejected then both receive only their initial endowments of 3000 ECU. If the agent accepts the contract he receives the fixed wage and decides on an effort level. Afterwards, both the agent and the principal get informed about their earnings.

In an exogenous bonus contract setting (BC-ex) the principal in addition to the fixed wage and suggested effort he or she announces the size of a non-binding bonus, B where $B \in \{0,1,\dots,2999,3000\}$, he or she may pay to the agent if satisfied by his or her effort level. Afterwards, the agent is informed about the offered contract and if the contract is accepted decides on an effort level. After being informed about the agent's effort level, the principal decides the bonus he or she wants to give to the agent, if any. Finally, both the agent and the principal get informed about their earnings.

In an exogenous revenue sharing contract setting (RSC-ex) the principal chooses the fixed wage, suggests an effort level and offers a share S where $S \in \{0.00, 0.01, \dots, 0.99, 1.00\}$ of the total (gross) revenue that will be given to the agent. Afterwards, the agent is informed about the offered contract and if he or she accepts the offered contract decides on an effort level. Finally, both the agent and the principal get informed about their earnings.

In a one-shot Trust-Bonus-Revenue sharing game (TBR) there is an additional first step in which the principal can choose which of the 3 possible contracts to offer; the trust, the bonus or the revenue sharing contract. After the principal has chosen contract type he proceeds with selecting the parameters of the relevant contract and offers it to the agent as in the previous games.

The repeated Trust-Bonus-Revenue sharing game (TBR-r) is identical to the TBR but is repeated for 6 rounds with the same co-player.

Theoretical Predictions

In the following, we derive hypotheses under two scenarios: (i) when the agent is self-interested and (ii) when the agent is inequality averse. Since the principal has a first-mover advantage, whether she is inequality averse or self-interested does not alter the theoretical predictions. Hence, in the following we assume that the principal is narrowly self-interested.

The principal chooses between the three contracts, explained below, and makes an offer to the agent. If the agent accepts the contract he could then choose his desired effort level. Three different contract types are available to the principals: the trust contract (TC), the bonus contract (BC) and the revenue sharing contract (RSC). The agent's gross profit in the case of a TC, BC and RSC are respectively defined as: $\pi^{A}_{TC} = F$, $\pi^{A}_{BC} = F + B$ and $\pi^{A}_{RSC} = F + S * R(e)$.

For all three contract types, a narrowly self-interested agent will only accept a contract if he is at least not worse off by accepting it. Hence, the agent's *participation constraint* can be written as $T(e) - C(e) \geq 0$, where $T(e)$ is the *transfer* the principal needs to provide to the agent as compensation for exerting effort at a cost $C(e)$. As the principal wishes to minimize the transfer to induce participation, she will set it just large enough to make the agent participate to the contract, i.e. at the point where $T(e) = C(e)$. The principal's profit is defined as $\pi^{P} = R(e) - T(e)$, where $R(e)$ is the total revenue generated and $T(e)$ the transfer to the agent. Given the revenue and cost functions introduced above, maximizing the principal's profit with respect to e results in $e = 74.5$. The experimental parameters only allow $e \in \{0,1, \dots ,19,20\}$, and so this maximization problem has a corner solution of $e^{*} = 20$.[5]

Having identified the participation constraint and the profit maximizing effort level, the following step is to show why, given the assumption that both the principal and the agent are rational and narrowly self-interested, the only contract that can satisfy the *incentive compatibility constraint* is the RSC.[6]

Replacing $T(e)$ with the *revenue sharing contract*'s specific transfer of $T_{RSC} = F + S * 150e$ results in the *incentive compatibility* constraint: $\forall e: F + S * 150e^{*} - e^{*} - e^{*2} \geq F + S * 150e - e - e^{2}$. Given that the agent would exert an effort greater than zero if $\pi^{A}(e^{*}) \geq \pi^{A}(e)$

[5] The decision to have a corner solution has been made deliberately expecting that it will be easier for subjects in the role of principals to identify e* if that is a corner than an interior point. In other words, the choice for a corner solution was made to reduce complexity.

[6] This assumes that both principals and agents are payoff maximizers.

is satisfied, the agent would, as a worst case accept, $\pi^A(e^*) = \pi^A(e)$. Maximizing the agent's profit $\pi^A_{RSC} = F + S * 150e^* - e^* - e^{*2}$ with respect to e^*, inserting the optimal effort level $e^* = 20$ and solving for S, results in $S = 0.27\dot{3}$, i.e. narrowly self-interested agents would react with $e^* = 20$ to any share $S \geq 0.27$. Hence, the principal will set *S=0.27* and *F=0*.

In a *trust contract* the principal offers the agent an unconditional fixed wage F and suggests the agent to provide an effort level e^s. However, if the agent accepts this offer, the suggested effort level e^s cannot be enforced by the principal. Consequently, the principal's monetary payoff resulting from a trust contract $TC(F, e^s)$ is defined as $R(e) - F$, whereas the agent earns $F - C(e)$. Under the assumption of self-interest, the principal will never offer a positive fixed wage and the agent will never exert any effort.

In a *bonus contract*, the principal offers a fixed wage F and suggests an effort level e^s. However, differently from the TC, the principal also announces to pay a bonus $B \in \{0,1, \dots, 2999, 3000\}$ if the agent delivers the suggested effort level. After the agent's effort choice, the principal has the opportunity to pay the agent a *voluntary* bonus in addition to the fixed wage F. Neither the agent's effort level e nor the principal's bonus payment B are enforceable. In addition, the principal is not restricted by the initially announced bonus, i.e. she can pay a bonus smaller equal or larger to the one initially announced. Similar to above, if both principal and agent are self-interested the principal will never pay a fixed wage or bonus, and the agent will always choose an effort level of zero.

Now we discuss inequity averse agents. In this paper we understand inequity averse agents to have a utility function as defined in Fehr and Schmidt (1999). Note that this utility function defines an agent's utility:

$$U^A = \pi^A - \alpha \cdot \max(\pi^P - \pi^A, 0) - \beta \cdot \max(\pi^A - \pi^P, 0) \quad (1)$$

where π^A and π^P denote the monetary payoffs for agents and principals, respectively. The parameters α and β describe the degree to which the agent dislikes being worse off and better off than the principal, respectively.

For *revenue sharing contracts*, if the agent does not only care about his own but also about the principal's income, the participation threshold for the share of 0.27 shifts upwards. Considering that both principals and agents would receive their endowments of 3000 ECU if no contract was formed, an agent would accept a contract and exert an effort greater than zero only if $U^A(\pi^A(e=1), \pi^P(e=1)) > U^A(\pi^A = 3000, \pi^P = 3000)$. Since $\pi^A_{RSC} = F + S \cdot 150e - e - e^2$ and $\pi^P_{RSC} = 150e - F - S \cdot 150e$ we can re-write the agent's utility as $U^A_{RSC} = F + S \cdot 150e - e - e^2 - \alpha(150e - F - S \cdot 150e\ - (F + S \cdot 150e - e - e^2))$, with

$$\text{FOC: } e = \frac{(300\alpha+150)S-1-151\alpha}{2\alpha+2}, \text{ and SOC: } -2\alpha - 2 < 0 \forall \alpha > -1. \quad (2)$$

Substituting the envy parameter $\alpha = 1$ we get the simpler FOC $e = \frac{450S-152}{4}$. [7] The participation constraint is satisfied if $e \geq 1$ which is the case for all shares $S \geq 0.343$. Thus, if principals make offers to inequity averse agents, the minimum offered shared they can expect to be accepted and that consequently results in $e > 0$ is 0.343.[8] By calculating S for $e = 20$ in the FOC above we find that a principal, in order to ensure that the agent exerts an effort of $e = 20$, should set the offered share to $S \geq 0.52$. Since the principal's payoff linearly increases in $e \; \forall S < 1$, the principal's payoff is also maximized by $e = 20$, even if the agent is inequality averse.[9]

[7] For example Blanco et al. (2011) estimate the parameter to be $\alpha = 0.93$, $\beta = 0.38$ which is very close to Fehr and Schmidt (1999) whose parameter distributions used means of $\alpha = 0.85$, $\beta = 0.32$.

[8] Note that a Fehr-Schmidt utility function is non-differentiable at $\pi^P = \pi^A$. For finding the participation constraint we only consider the case of $\pi^P > \pi^A$ as the payoff maximizing principal will always earn more than the inequity averse agent by choosing the contract parameters accordingly.

[9] The online appendix A also discusses predictions under the assumption of inequity averse agents using a utility function as proposed by Charness and Rabin (2002). The resulting predictions are qualitatively similar to the ones under a Fehr and Schmidt (1999) utility function and are robust against a generous variation of the parameters reported in Charness and Rabin (2002).

For *trust contracts*, it is obvious that a payoff maximizing agent should respond with $e = 0$ to the fixed wage F. However, if the agent is inequality averse this behavior of complete agent inactivity is no longer optimal; neither for the principal nor for the agent and there is scope for Pareto improvement. Since the agent is inequality averse (and thus dislikes earning less, and - to a lesser extent - also dislikes earning more than the principal), the agent will not free-ride on any positive fixed wage, but will choose his effort level according to any positive F. The principal anticipates this behavior by choosing F such that the agent's effort choice maximizes the principal's payoff and thus

$$F = \frac{(149\beta+151\alpha+2)e-150\beta+(\alpha+\beta)e^2}{2\alpha+2\beta}.^{10} \quad (3)$$

Substituting $\alpha = 1, \beta = 0.35$ and (since it makes the payoff maximizing principal always best off) $e = 20$ results in the optimal offer: $F = 1701$.

For *bonus contracts*, similarly to trust contracts, if the agent is inequity averse, a self-interested principal would pay a fixed wage of 1701 ECU and the agent will best respond with an effort of 20. Furthermore, the principal will not pay a bonus, i.e. $B = 0$.

Regarding the choice between trust contract and bonus contract, using a bonus contract allows the principal to reduce the risk she faces from a shirking agent (Fehr et al., 2007), for instance by paying half now and half after effort is observed. Consequently, principals may prefer bonus contracts to trust contracts. A complementary intuition stems from the fact that the TC is a subset of the BC; that is, a principal could always choose the BC and pay solely a fixed wage. Therefore, choosing the BC provides greater flexibility to the principal.

[10] This value of F indicates the threshold that makes agents indifferent between exerting e or $e-1 \forall e \geq 1$. It takes into account that agents dislike being worse off, but also being better off than principals. It also follows that inequity averse agents will accept any trust contract and produce $e > 0$ for all $F \geq 58$. Thus, in contrast to pure payoff maximizing agents where trust and bonus contracts can never satisfy the participation constraint, both contracts can satisfied it for inequity averse agents.

Hypotheses

Table 1 below provides a summary of the theoretical predictions for each of the three contracts, under the assumptions of: a) both principal and agent are self-interested, and b) the principal is self-interested but the agent inequity averse. Under the assumption of self-interest, the revenue sharing contract is the only contract that can be devised in an incentive compatible manner. In the one-shot bonus or trust contracts there is a zero fixed wage, zero effort and (in the case of the bonus contract) a zero bonus. Conversely, by choosing a suitable revenue share for the agent, the agent puts in more effort and both principal and agent earn higher profits. In addition, even if the agent is inequity averse, the revenue sharing contract remains the most suitable choice for the principal. Consequently, we expect that:

Hypothesis 1: Principals prefer the revenue sharing contract over the bonus or trust contracts.

Hypothesis 2: Agents provide more effort, and therefore the revenue will be higher, in revenue sharing contracts than in bonus or trust contracts.

Hypothesis 3: In bonus contracts, principals will not meet their announced bonus payments (if any).

Hypothesis 4: In revenue sharing contracts, principals offer incentive compatible contracts, and specifically the lowest feasible incentive compatible share of 0.27.

[Insert Table 1 about here]

Under rational self-interest we should observe a 60:40 split of the profits in favor of the principal. However, it is possible that distributional fairness may come into play and if so we might find a more equal distribution than the profit maximizing prediction.

Hypothesis 5: In revenue sharing contracts, under the assumption of rational self-interested agents, the overall profits are distributed in a ratio of 60:40 between principals and agents to the disadvantage of the latter.

Experimental Sequence

Subjects read the instructions and filled a short questionnaire for the purpose of checking their understanding; explanations of any incorrect answer were provided by the software. Then three practice games, identical to the TC-ex, BC-ex, and RSC-ex games, were played to help the subjects familiarize with the experiment. The participants could ask questions at the end of each practice round.

The ten payoff-relevant rounds were then played, consisting of one round of TC-ex, BC-ex, RSC-ex, and TBR each, plus a TBR-r game of six rounds. The order of games was counterbalanced as indicated in Figure 1. At the end of the experiment each participant was paid anonymously. All participants were informed at the start of the experiment that a random lottery payment mechanism would be used to determine payments, i.e. one of the ten payoff-relevant rounds was randomly chosen and the participants were paid according to their performance in the randomly selected round.[11] The Experimental Currency Units (ECUs) earned in the randomly selected round were converted into pounds at the rate of £0.004 per ECU. 144 students from the University of East Anglia were recruited for the experiment via ORSEE (Greiner, 2004). The experiment lasted approximately 1 hour and 30 minutes and participants earned on average £15.46.

III. Results

A total of 144 subjects participated in the experiment which was conducted at the CBESS laboratory at the University of East Anglia. In what follows we consider the contract choice by the principal (sub-section 0), the corresponding effort by the agents (sub-section 0), whether

[11] The random lottery system is a standard mechanism employed in the experimental methodology to control for wealth effects while not distorting the marginal incentives in each task; for a methodological discussion see Cubitt et al. (1998).

the principals honored their bonus promises when a bonus contract was selected (sub-section 0), and what the data tell us about efficiency and fairness (sub-section 0).[12]

Contract choice

This sub-section considers the choice of contract by the principals.

Result 1: When given the option to choose between the three contracts, both in the one-shot (TBR) and the repeated games (TBR-r) three choices out of four were in favour of the revenue sharing contract RSC. The bonus contract (BC) was preferred to the trust contract (TC).

[Insert Table 2 and Figure 2 about here]

Table 2 presents the percentage of chosen contracts in the TBR and TBR-r treatments, and Figure 2 shows how the proportions evolve over time in the TBR-r. More generally, in line with hypothesis 1, the revenue sharing contract was the most preferred contract by principals being selected 75% of the times, against 21% and 4% of choices for the bonus contract and the trust contract, respectively. These differences are all significant in Wilcoxon tests.[13] Table 2 also shows that the distribution of choices is virtually indistinguishable between TBR and TBR-r.

As participants in the TBR-r games repeatedly made choices about contracts and contract parameters (principals), accepting or rejecting contracts and setting effort levels (agents), we also analyzed behavioral changes over time. As shown in Figure 2, there is an upward trend in choice of the RSC in the TBR-r, from in aggregate 71% in the first round to 86% in the last one. A multilevel Probit regression with subjects nested in sessions on the likelihood of choosing the RSC confirms the statistically significant positive time trend ($p<0.001$). Furthermore, if participants were exposed to the exogenous contract settings before making decisions in TBR and TBR-r games (in session 1-6), they were significantly more likely to

[12] For a fine-grained summary of descriptive statistics, see Table C1 in the online appendix.

[13] In this paper, all non-parametric test statistics were calculated on session level means per game (TC-ex, BC-ex, RSC-ex, TBR, or TBR-r), unless stated otherwise. All p-values in the paper are two-tailed unless otherwise specified.

choose RSC and less likely to choose the BC once they were offered the choice to do so. It seems that principals learned about the advantages of the RSC in the exogenous contract settings and were happy to choose it on average over 81% of the time as opposed to 66% of the time when they were not forced to use all contracts once before selecting their contract of choice (see Figure 2). However, in terms of revealed effort levels, we find no significant evidence for an order effect for all three contract types. This is confirmed by regression analysis (see Table 4). Figure 3 indicates which contract parameters principals chose for each of the available contracts. In contracts with more than one parameter (i.e. BC, RSC), the contract parameters were negatively correlated which suggests that they were used as complements, i.e. principals traded-off the offered fixed wage against the announced bonus and the revenue share in BC and RSC, respectively.

[Insert Figure 3 and Table 3 about here]

Table 3 shows that a large majority of the principals earned less by switching from the RSC to either TC or BC, and while half of the agents earned more from the principal switch from RSC to BC, none did so from the switch to RSC to TC. Online appendix D provides details on the contract parameters chosen by principals (separated by game), and online appendix E on the evolution of contract choices over time.

Effort levels

This sub-section considers the choice of effort by agents.

Result 2: Effort levels were on average 60% higher in revenue sharing contracts relative to bonus contracts. Effort levels were 50% higher when a bonus contract was used than a trust contract.

[Insert Figure 4 and Table 4 about here.]

The average effort level across all games under revenue sharing, bonus and trust contracts are 16.18, 10.06 and 4.9 respectively. Figure 4 illustrates the average effort over time and Table 4

presents regressions with agents' effort as the dependent variable. In line with hypothesis 2, the effort levels chosen by the agents in revenue sharing contracts were significantly higher than in bonus or trust contracts. This is true for the overall sample and for each of the games separately (Wilcoxon $p<0.05$). The regression coefficient on the RSC dummy is significant, implying, other things being equal, an increase in effort in revenue sharing contracts by at least around 9 points relative to the trust contract. The coefficient of the RSC dummy is also statistically significantly higher than the coefficient of the BC dummy, i.e. the regression analysis confirms that the RSC results in more effort than the BC (F-test, $p<0.001$) which itself results in more effort than TC. Effort levels were significantly higher with bonus contracts than with trust contracts. This is true for the overall sample, for the exogenously set games and for TBR-r ($p<0.05$ for each of the tests). In TBR the difference between bonus and trust contracts was not statistically significant due to the very small number of observations[14] of TC ($p=0.26$). The results in Table 4 imply that suggested effort positively affected actual effort.[15] Other contract details mattered as well: in the BC, effort increased in the size of the announced bonus and, in the RSC, it increased with the revenue share offered to the agent, particularly if incentive compatible, i.e. the offered share was greater than or equal to 0.27. Overall, increasing the fixed wage significantly increased effort. However, this result is driven by trust and bonus contracts. Analyzing revenue sharing and bonus contracts separately (see column 3 and 4 in Table 4) indicates that a higher fixed wage only slightly increased effort in BC whereas it did not have any effect on effort under revenue sharing contracts.

[Insert Figure 5 about here.]

[14] The number of times a TC, a BC or an RSC was selected in the TBR were 3, 15 and 54 respectively.
[15] Unlike actual effort, suggested effort did not change across treatments, and tended to be close to the maximum of 20 (see Table C1 in the online appendix).

Honoring bonus payments

Result 3: In the bonus contract, **t**he majority of principals pay bonuses, but less than they announced to pay.

In line with hypothesis 3, over 81% of all bonus contracts, principals did not honor their initial bonus announcements.[16] Figure 5 shows how the actual bonus payments were conditioned on revealed effort; while there was always a gap between actual and announced bonus payments, mean actual bonus payments were lowest when agents produced less than the suggested effort. In a further regression analysis (in the online appendix), we show that, in line with previous literature (e.g. Fehr and Schmidt, 2000; Fehr and Schmidt 2004; Fehr et. al. 2007), in the bonus contract, the actually paid bonus was a positive function of revealed effort. Specifically, we find that each extra unit of effort led to around 34 ECU in extra bonus.[17]

Efficiency and fairness in revenue sharing contracts

This sub-section considers the extent to which revenue sharing contracts met considerations of efficiency and fairness.

In line with hypothesis 2, the revenue sharing contract was the most efficient contract. Average total revenue was 2238 ECU in RSC-ex versus 1302 ECU in BC-ex and 738 ECU in TC-ex (Wilcoxon tests, $p<0.01$ in all cases). In the TBR, mean total revenue was 2389, 1420 and 200 ECU when the revenue sharing contract, the bonus contract and trust contract, were chosen respectively. In the TBR-r, the corresponding numbers are 2476, 1690 and 200 ECU for the revenue sharing contract, the bonus contract and trust contract respectively. Both in TBR as well as in TBR-r the average total revenue is highest for revenue sharing contracts (one-sided Wilcoxon tests; TBR: RSC vs BC: $p=0.025$, RSC vs TC: $p=0.006$; TBR-r: RSC vs BC: $p<0.001$, RSC vs TC: $p<0.001$). The average total revenue was not significantly different between TBR

[16] They matched it only around 16% of the cases, and provided a higher bonus in less than 3% of the cases.
[17] The online appendix (Table C3) includes a linear regression (multilevel, mixed effects) model, estimated with random intercepts on subjects nested in sessions, in which no other variable is statistically significant.

and TBR-r rounds (for all contract types, $p>0.4$).[18] As shown by Table 3, in a majority of cases, ranging from 64% to 89% depending on the combination, the total revenue of principal-agent pairs went up if the principal switched from BC or TC to RSC, and went down in the opposite case.

Result 4: Over 70% of offered revenue sharing contracts were incentive compatible. However, offers tend to be higher than the lowest incentive compatible share of 0.27.

[Insert Figure 6 about here]

Figure 6 shows the distribution of revenue shares offered and whether they were accepted or rejected by the agents. In line with hypothesis 4, the majority of offered revenue sharing contracts (70%) were incentive compatible.[19] Not a single principal chose a revenue share of exactly 0.27, the share predicted as the profit maximizing one under narrow self-interest.[20] The mean offered share was 0.382 (median: 0.4), and was not significantly different across RSC-ex, TBR, and TBR-r games (all Wilcoxon tests between games reveal $p>0.4$). The actually offered shares were significantly higher than the lowest incentive compatible share of 0.27 both for the full sample and for each game separately (sign tests, all $p<0.05$). However, the offered shares were significantly lower than the inequity averse prediction of a 0.52, if 100% of agents are assumed inequity averse (sign tests, all $p<0.001$.).

Overall, about 7% of the revenue sharing contracts were rejected. When the offered share was greater than or equal to 0.27 only 6% of the contracts were rejected whereas 11% of offers with shares of less than 0.27 were rejected. With a fixed wage of 0, a share of 0.57 would result in an exact 50:50 split between principal and agent. For this reason we divided the offered shares in three categories: the incentive incompatible offers with $S < 0.27$; the offers which would lead

[18] For descriptive statistics on revenues including standard errors, please see Table C4 in the online appendix.
[19] Specifically, 74%, 83% and 78% of contracts offered were above 0.27 in RSC-ex, TBR and TBR-r respectively.
[20] This is true for all RSC occurrences irrespective the game type (RSC-ex, TBR, and TBR-r). However, over 60% of the revenue sharing contracts offered "round shares", i.e. shares that had either 0 or 5 at the second decimal place.

to the agent earning more than an equal split $S > 0.57$; and the offers which lied in between $0.27 \leq S < 0.57$. Comparing the three areas of offered shares, i.e. $S < 0.27$, $0.27 \leq S < 0.57$, and $S \geq 0.57$, we found no statistical difference regarding the rate of rejections between the contract offers with $S < 0.27$ and $0.27 \leq S < 0.57$ (Wilcoxon, p=1). However, the rejection rates of contracts that offered $S \geq 0.57$ were significantly lower than for offers either of $S < 0.27$ or of $0.27 \leq S < 0.57$ (Wilcoxon, p=0.025 and p<0.001, respectively). The average rejection rates were 6% and 0% for $0.27 \leq S < 0.57$ and $S \geq 0.57$, respectively. In fact, the rejection rate for $S \geq 0.52$, i.e. the predicted share for a population of 100% Fehr and Schmidt (1999) inequity averse agents, was 0% as well. The difference between rejection rates below and above 0.52 is significant (Wilcoxon: p=0.002).

The observed mean of offered shares of 0.382 could be explained by a number of factors. First, there is no large increase in rejection rate for offers above 0.27 and up to 0.52, and so there is reason to believe that principals may be offering a little over 0.27 not to reduce the likelihood of being rejected but rather out of fairness. This conjecture is consistent with the findings of Anderhub et al. (2002), which suggest concerns for fairness to be the influential factor behind offers higher than the incentive compatibility constraint. Second, the observed mean of 0.382 could be explained by the principals assuming that there is a distribution of the inequity averse parameter in the population of agents who differ in the extent to which they are inequity averse.[21] Third, it is possible that offering larger shares increases the salience of the opportunity to benefit from contributing high effort levels.

[21] The goodness of fit of Charness and Rabin's (2002) model is considered in the online appendix, and is inferior to Fehr and Schmidt's (1999) for the specific setup of this paper. It is less likely that the principals assumed a certain share of agents to be perfectly self-interested and the rest of agents to be totally inequity averse as this would have resulted in a binomial distribution of offered shares around 0.27 and 0.53 (depending on whether a principal believed that she was making an offer to a perfectly self-interested or entirely inequity averse agent). However, our data does not support this interpretation (see Figure 6).

Result 5: Revenue sharing contracts resulted in a fairer distribution of profits than the profit maximizing prediction and this distribution is close to the prediction for inequity averse agents. Nevertheless, welfare gains were mostly absorbed by the principals.

[Insert Table 5 about here]

Because of most revenue sharing contracts having a revenue share for the agent of more than 0.27, as shown in Result 4, we would expect to observe a split that is more equal than 60-40% for the principal. Table 5 shows that this is indeed the case, with 53% going to the principal in the exogenous revenue sharing contract (RSC-ex), 53% in the one-shot game selected revenue sharing contracts (TBR) and 54% in the repeated game selected revenue sharing contracts (TBR-r), percentages all significantly lower than 60% (Wilcoxon $p<0.001$). We find no significant difference between RSC-ex, TBR, and TBR-r rounds (Wilcoxon, $p>0.2$). Comparing our profit distribution to our theoretical predictions for inequity averse agents or with empirical findings from other games suggests that a 53:47 or 54:46 split is quite close to the inequity averse prediction of 52:48 (Fehr and Schmidt 1999; Güth et al. 1982).

[Insert Table 6 about here]

Table 6 shows that the overall profits were higher in revenue sharing contracts than in trust contracts and bonus contracts. It also shows that the principals largely absorbed the surplus, earning 18% and 44% more in revenue sharing contracts than in bonus and trust contracts, respectively. This higher efficiency applies across all games, and therefore explains why, when a choice was given, principals tended to choose revenue sharing contracts.

The agent's average profit was larger when a RSC was implemented when compared to a BC (Wilcoxon, $p=0.039$) and at least the same under TC (Wilcoxon, $p=0.089$). These differences are maintained under the exogenous contracts, but the results are not significant for TBR and TBR-r. In any case, these results suggest that the agents were at least not worse off in terms of earnings when an RSC was implemented. The share of the surpluses between principals and agents was almost the same under all three contract types, being very close to the inequity

averse prediction. In relative terms agents were almost no worse off in revenue sharing contracts than they were in the other contracts (3% relative to trust contracts and 4% relative to bonus contracts). In the TBR-r, switches from BC to RSC and from TC to RSC both resulted in higher profits for agents (in 56% and 70% of the cases, respectively: see Table 3).

IV. Discussion

This paper explored how monetary incentives and intrinsic motivation can complement each other in principal-agent settings. We asked principals to choose between using a bonus contract as in Fehr et al. (2007), a revenue sharing contract as in Anderhub et al. (2002) and a trust contract as a third option. In contrast to Fehr et al. (2007), who found that only 10% of the principals chose the enforceable monetarily incentivized contract, in our experiment on average over 75% of the principals chose such an option. Moreover, we find that revenue sharing was also more efficient than the bonus and trust contracts by leading the agents to exert 60% more effort in the RSC as in the BC. Consequently more revenue was generated and on average both principals and agents earned more when a revenue sharing contract was used. However, the majority of the additional output was absorbed by the principal. That being said, the distributions of profits were fairer than the theoretical predictions under self-interest and close to the inequity averse prediction. Lastly, in line with Fehr et al. (2007), though on average principals reciprocated to positive effort levels with positive bonuses, some principals did not pay a bonus at all and the majority of principals (81%) paid a bonus smaller than what they initially announced.

It is not surprising that principals tend to prefer the bonus contracts over the trust contracts. Bonus contracts reduce the relative risks for the principal compared to the trust contract by allowing to pay a portion of the wage upfront and a portion after effort has been observed. Where the trust contract only requires a trusting principal, the bonus contract requires both players to show trust to each other. The revenue sharing contract eliminates all risks of free

riding for both principal and agent and this is achieved without providing negative connotations of distrust, as with a monitoring contract. We believe that these two motives may to a great extend explain the differences we observe between our study and that of Fehr et al. (2007), in which the bonus contract was the most preferred option. That said, we note that the revenue sharing contract differs from the bonus contract both in terms of the shape of the incentive mechanism and in terms of risk reduction, and so more research is clearly needed to separate out these alternative driving forces.

Our results are in line with the findings of Fehr et al. (2008) on the optimal allocation of property rights. In their study, two parties negotiate over the allocation of ownership rights before investing in a project. In one treatment the two parties start with joint ownership and one of the two players (the principal) can decide to either sell her share or retain it. In another treatment, the principal is the sole owner and can either sell 50% of the firm (i.e. offer joint ownership) or offer a fixed wage to the second party. The majority of the principals (approximately 64%) preferred joint ownership and similarly the agents responded with high investment levels. Our experiment has a different design since it provides a straight choice among a revenue sharing contract, a fixed wage contract as well as a bonus contract. There is also no restriction on the revenue share that can be offered, making offer shares less attractive to inequity averse agents possible. By providing a wider choice set and allowing revenue sharing contracts that could be less attractive to inequity averse agents, our experiment therefore provides a more general test of the success of revenue sharing than those provided by Fehr et al.'s (2008) settings. An additional element of generality was that we tested, and found our results robust to, having a one shot relative to a repeated game setup.

It is a feature of having equal initial endowments that the difference between the payoff outcomes under equality and that under 100% self-interested agents is one between a 50:50 and 60:40 ratio in the revenue sharing contract, even though the underlying behavior is one where the revenue share chosen by the principal ranges from 0.27 to 0.57. In future research, one could

increase the gap between self-interested and inequity averse predictions by suitable endowment changes as a robustness test of our results.

V. Conclusions

We have presented a simple principal-agent experiment in which the principals are allowed to choose between a revenue sharing, a bonus and a trust contract, to offer to an agent. Revenue sharing contracts emerge as the preferred contract by a large number of principals when they are given this choice. They provide a 'carrot' to agents by encouraging them to work more by getting a share of the profits, and this works in a way that the monitoring contract used by Fehr et al. (2007) does not when offered as an alternative to bonus contracts. In other words, in incentive-compatible type of contracts, carrots appear to work better than sticks.

A key finding of our experiment is that revenue sharing contracts have the advantage of being the most efficient form of contracts while at the same time being fair. The distribution of earnings is only mildly skewed towards the principal. Indeed, in the repeated games, switches to revenue sharing contracts led to Pareto improvements for a majority of both principals and agents. We conclude that under revenue sharing contracts concerns for fairness can go in hand with efficiency and the use of monetary incentives.

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Figure 1: Sequential Structure of the Experiment

Sessions 1-6

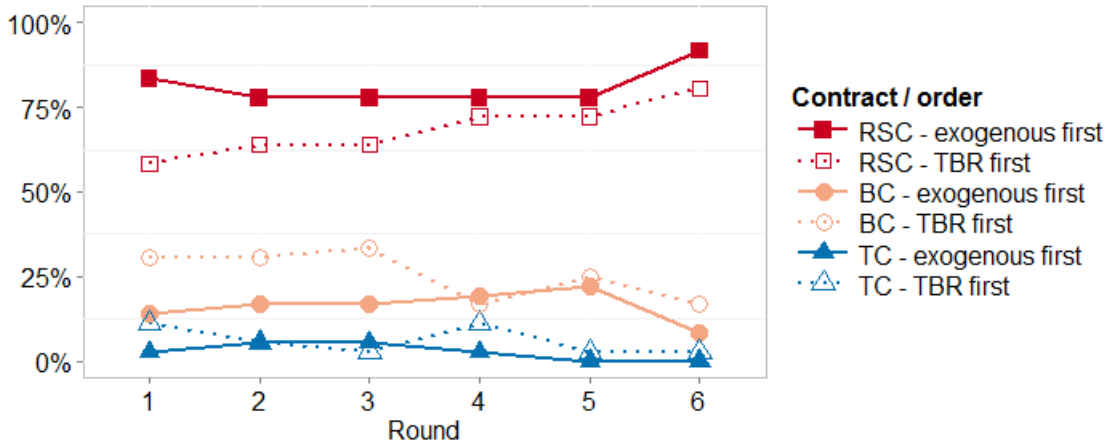
Round 1	Round 2-7	Round 8	Round 9	Round 10
TBR	TBR-r	TC-ex	BC-ex	RSC-ex

Sessions 7-12

Round 1	Round 2	Round 3	Round 4	Round 5-10
TC-ex	BC-ex	RSC-ex	TBR	TBR-r

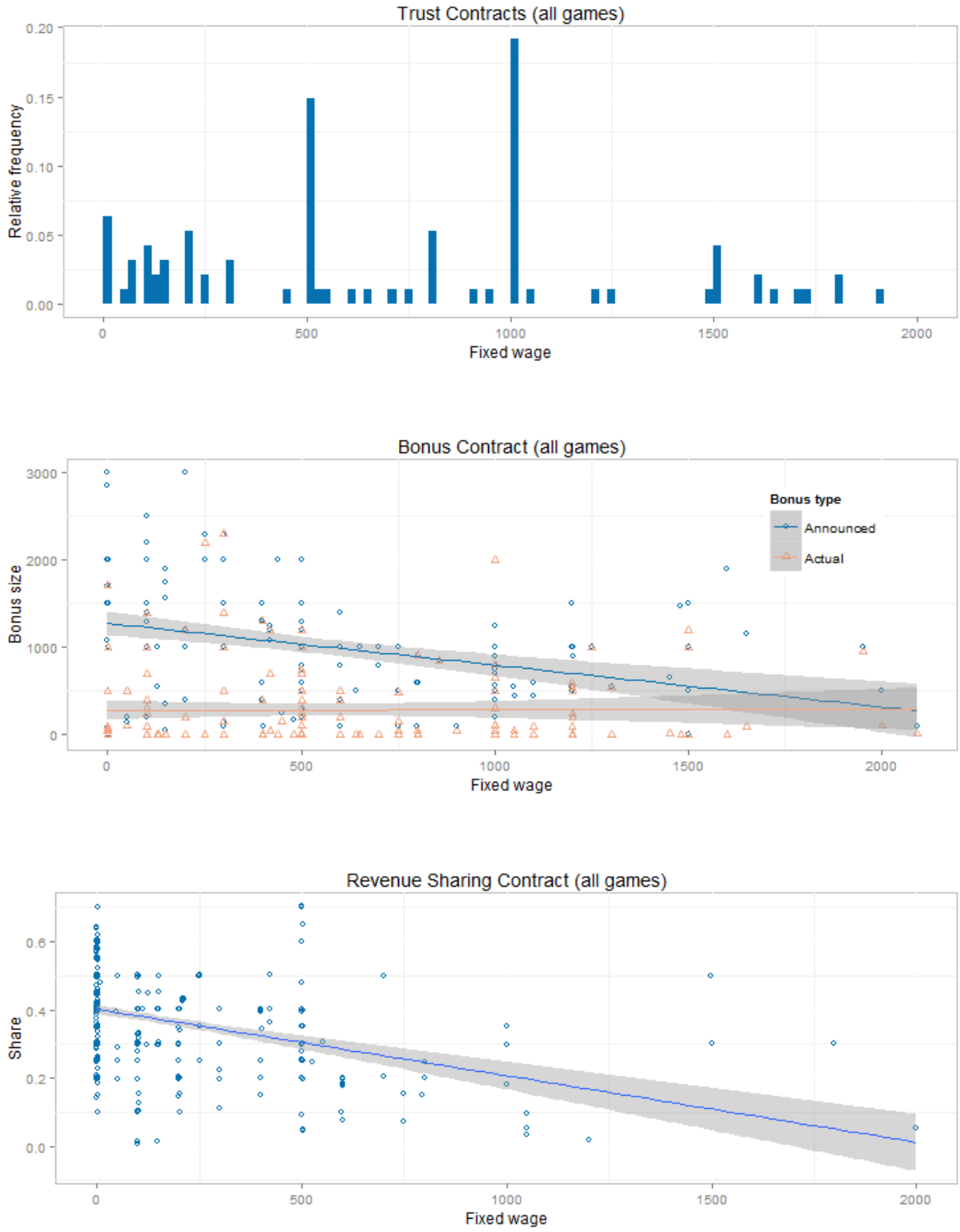
Notes: In the games TC-ex, BC-ex, and RSC-ex the contracts could not be chosen but were set exogenously to be a Trust, Bonus, and Revenue Sharing Contract, respectively. TBR and TBR-r represent a one-shot and repeated contract choice settings, respectively.

Figure 2: Percentage of chosen contracts over time in repeated contract choice settings (TBR-r)



Notes: TC, BC and RSC indicate the trust, the bonus and the revenue sharing contract, respectively. The lines labelled *TBR first* only contain observations from subjects that first were confronted with the games TBR and TBR-r before playing games with exogenously imposed contracts (TC-ex, BC-ex and RSC-ex). Conversely, *exogenous first* indicates that subjects first faced exogenously imposed contracts before giving the principals the choice over contract types (see Figure 1 for a description of both orders). If participants were exposed to the exogenous contract settings before making decisions in TBR and TBR-r games they were significantly more likely to choose RSC and less likely to choose the BC once they were offered the choice to do so (Wilcoxon tests: $p=0.020$, $p=0.001$ and $p<0.001$ for TC, BC and RSC, respectively).). However, in terms of revealed effort levels, we find no order effect for all three contract types (Wilcoxon tests: $p=0.069$, $p=0.763$ and $p=0.362$ for TC, BC and RSC choices in all TBR-r rounds, respectively).

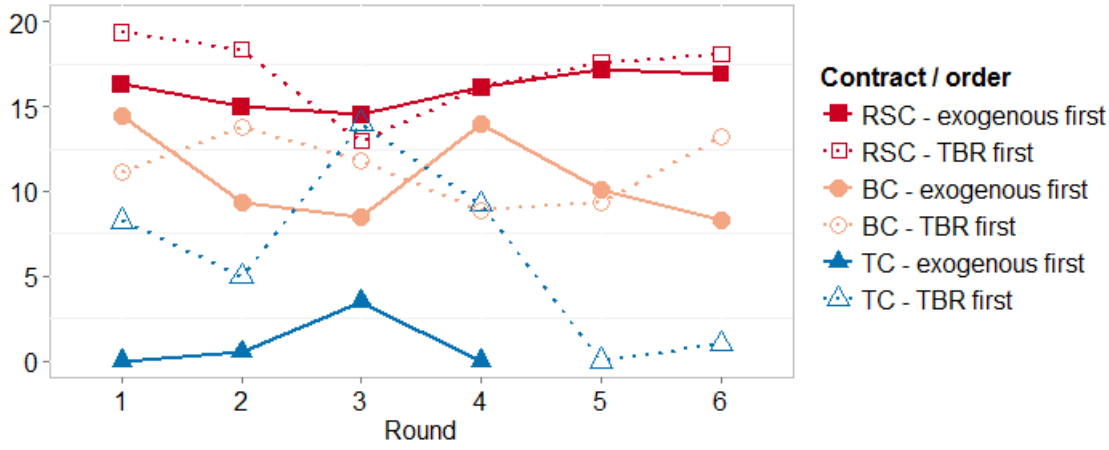
Figure 3: Visualization of contract parameters chosen by the principal



Notes: The top panel presents a histogram of fixed wage offers for all TCs. The middle panel depicts a scatterplot of the announced bonuses (circles) and actual bonuses (triangles) against the corresponding fixed wages for all BCs. The announced bonuses are strongly negatively correlated with the fixed wage offers (Spearman: ρ=-0.393, $p<0.001$). However, there is a much weaker and even positive correlation between the actually paid bonuses and

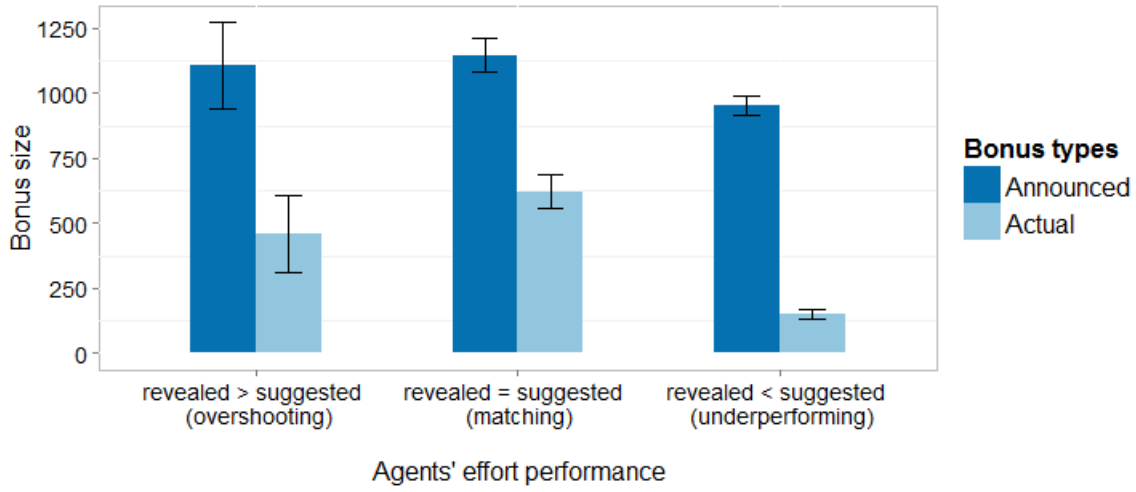
the offered fixed wages (Spearman: ρ=0.105, p=0.049). The bottom panel shows a scatterplot of the offered shares against the fixed wage in all RSCs. The negative correlation between share and fixed wage (Spearman: ρ=-0.431) is highly significant (p<0.001). The grey areas in the middle and the bottom panel represent 95% confidence intervals.

Figure 4: Average effort by contract type over time in repeated contract choice settings (TBR-r)



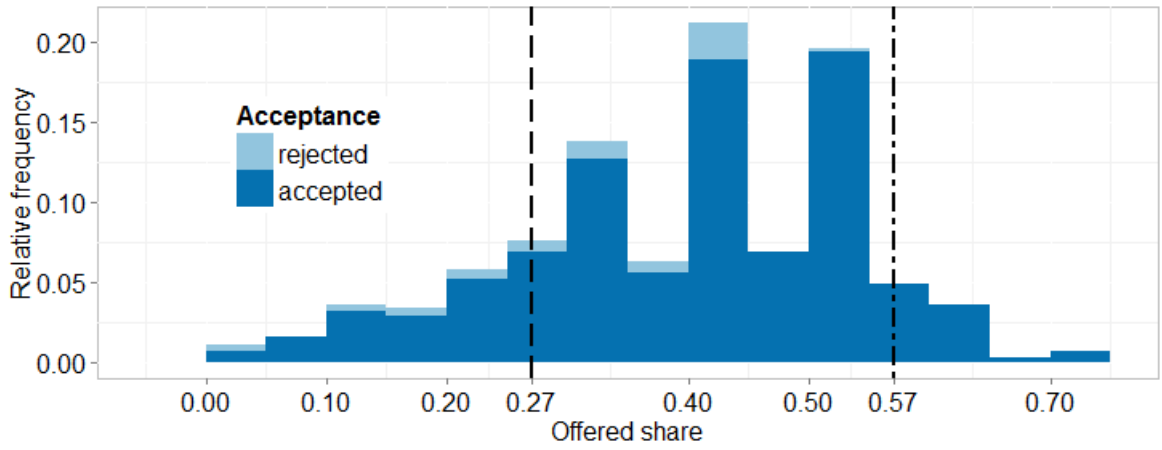
Notes: TC, BC and RSC indicate the trust, the bonus and the revenue sharing contract, respectively. The lines labelled *TBR first* only contain observations from subjects that first were confronted with the games TBR and TBR-r before playing games with exogenously imposed contracts (TC-ex, BC-ex and RSC-ex). Conversely, *exogenous first* indicates that subjects first faced exogenously imposed contracts before giving the principals the choice over contract types (see Figure 1 for a description of both orders). Note that in the condition *TC-exogenous first* not a single principal chose TC in round 5 or 6 (hence these observations are missing from the figure).

Figure 5: Conditioning of actual bonus payments on revealed effort



Notes: The figure shows mean actual bonus payments depending on whether the revealed effort was higher than, the same as or lower than the suggested effort. Agents were punished with significantly lower bonus payments when they exerted less effort than suggested (Wilcoxon $p<0.001$). Error bars denote standard errors.

Figure 6: Histograms of revenue shares offered by principals



Notes: This figure includes observations of all revenue sharing contracts, irrespective the actual setting (RSC-ex, TBR and TBR-r). The vertical lines depict the lowest incentive compatible share under self-interest (long dash, at 0.27) and the share that results in an exact 50:50 split (dash dotted, at 0.57).

Table 1: Theoretical Predictions

Both Principal and Agent are self-interested							
	Fixed Wage	Bonus	Share	Π_P	Π_A	U_P	U_A
Revenue Sharing Contract	0	-	0.27	5190 ECU	3390 ECU	5190	3390
Bonus Contract	0	0	-	3000 ECU	3000 ECU	3000	3000
Trust Contract	0	-	-	3000 ECU	3000 ECU	3000	3000
Principal is self-interested and Agent is inequity averse							
	Fixed Wage	Bonus	Share	Π_P	Π_A	U_P	U_A
Revenue sharing Contract	0	-	0.52	4440 ECU	4140 ECU	4440	3840
Bonus Contract	1701 ECU	0	-	4299 ECU	4281 ECU	4299*	4263
Trust Contract	1701 ECU	-	-	4299 ECU	4281 ECU	4299*	4263

Notes: This table summarizes the theoretical predictions for each of the three contracts under the assumption of narrow self-interest and inequity averse preferences, using a utility function as in Fehr and Schmidt (1999). For RSC under narrow self-interest this results in a 60:40 split in favor of the principal, i.e. [5190/(5190+3390)]/[3390/(5190+3390)]. *If, in addition to the agent, also the principal had inequity averse preferences, these utility values would change to 4293 (for both the BC and the TC), yet the optimal contracts remain unchanged.

Table 2: Percentages of chosen contracts

	TBR	TBR-r
TC	4.17%	4.40%
BC	20.83%	20.83%
RSC	75.00%	74.77%

Notes: All differences between contract types are highly significant in Wilcoxon tests (all $p<0.01$ for both TBR and TBR-r). Specifically, TC vs RSC: $p<0.001$ for TBR and TBR-r, BC vs RSC: $p<0.001$ for TBR and TBR-r; TC vs BC: $p=0.007$ for TBR and $p<0.001$ for TBR-r.

Table 3: Proportion of switches between contracts that resulted in improved outcomes

		Higher individual profits		Higher total revenue of
		Principal	Agent	principal-agent pair
TC →	BC	50.0%	50.0%	75.0%
	RSC	77.8%	55.6%	88.9%
BC →	TC	60.0%	20.0%	20.0%
	RSC	72.7%	69.7%	63.6%
RSC →	TC	25.0%	0.0%	0.0%
	BC	34.6%	50.0%	26.9%

Notes: This table is based on data from rounds 2-6 of TBR-r games. Only contract switches were considered, i.e. if principals chose a different contract in round t-1 then in round t. The differences in the principals' profits are highly significant for both switching from TC to RSC and from BC to RSC (Wilcoxon tests: p=0.013 and p=0.005, respectively). Although switching to the RSC from either TC or BC also made at least 55.6% of agents better off, the average increase in agents' profits is not significant (p=0.450 and p=0.672 for TC->RSC and BC->RSC, respectively).

Table 4: Determinants of Agents' Effort for Accepted Contracts

	(1)	(2)	(3)	(4)
	all	all	RSC only	BC only
BC	3.951***	8.711***		
	(0.889)	(1.761)		
RSC	9.015***	13.38***		
	(1.034)	(1.417)		
Suggested effort	0.489***	0.0454	0.397	0.245
	(0.0884)	(0.0931)	(0.218)	(0.143)
Fixed wage	-0.0000241	0.00481***	-0.000246	0.00347*
	(0.000838)	(0.00129)	(0.00118)	(0.00145)
Exogenous contract	-1.449	0.895	-1.223	-2.801
	(1.007)	(2.043)	(1.099)	(1.795)
Game TBR	-0.812	-1.889	-1.007	-3.367

	(0.865)	(2.093)	(0.818)	(2.899)
Overall round	-0.0388	-0.0469	-0.0872	-0.107
	(0.115)	(0.113)	(0.117)	(0.226)
Round within game TBR-r	-0.0455	-0.0441	-0.0767	-0.245
	(0.156)	(0.154)	(0.159)	(0.408)
BC x fixed wage		-0.00328		
		(0.00213)		
BC x suggested effort		0.468**		
		(0.154)		
RSC x fixed wage		-0.00743***		
		(0.00161)		
RSC x suggested effort		0.762***		
		(0.221)		
Exogenous contract x BC		-3.466		
		(2.221)		
Exogenous contract x RSC		-1.884		
		(2.097)		
Game TBR x BC		-0.736		
		(3.175)		
Game TBR x RSC		1.413		
		(1.961)		
Share			7.931***	
			(2.281)	
Incentive compatible share			3.000*	
			(1.150)	
Announced bonus				0.00503***
				(0.000960)
Constant	8.205***	3.270*	15.71***	8.421***
	(0.896)	(1.555)	(0.768)	(1.481)
Observations	656	656	418	155
Adjusted R^2	0.376	0.402	0.237	0.176

Notes: The baseline condition for the estimations in columns 1 and 2 was TC in the game TBR-r. Columns 3 and 4 were estimated using only RSC and BC observations, respectively. The table contains coefficients of linear regressions with standard errors clustered at subject level in parentheses. All variables that were interacted with

BC or RSC (i.e. fixed wage, announced bonus, suggested effort, share, incentive compatible share, exogenous contract and exogenous games first) were subtracted off their means before estimating the models. Tables C5 and C6 in the online appendix contain the results of multilevel models (to additionally control for session level non-independence) and Tobit regressions (to control for data censoring at 0 and 20), respectively. These results are very close to those presented here (both qualitatively and quantitatively). BC and RSC are dummies for the bonus and the revenue sharing contract, respectively. TBR and TBR-r indicate one-shot and repeated games with endogenous contract choice by the principal. The dummy incentive compatible share is one if the principal offered a share ≥ 0.27, the lowest share that satisfied the incentive compatibility constraint, and zero otherwise. Exogenous contract is a dummy for TC-ex, BC-ex and RSC-ex games and the dummy exogenous games first controls for order effects; ***, ** and * indicate statistical significance at 0.1%, 1% and 5% level.

Table 5: Predicted and observed distribution of profits resulting from revenue sharing contracts

Prediction				Observation			
		Profit	Share			Profit	Share
Self Interest	Principal	5190	60%	Results RSC-ex	Principal	4206	53%
	Agent	3390	40%		Agent	3741	47%
	Difference		20%		Difference		6%
Inequity averse agent	Principal	4440	52%	Results TBR	Principal	4269	53%
	Agent	4140	48%		Agent	3806	47%
	Difference		4%		Difference		6%
				Results TBR-r	Principal	4359	54%
					Agent	3786	46%
					Difference		7%

Notes: RSC-ex denotes an exogenously determined one-shot revenue sharing contract. TBR and TBR-r represent contract choice situations in a one-shot and repeated game, respectively. Only accepted contracts are considered for the profits in the right part of the table (*Observation*).

Table 6: Average and standard deviation of profits across contracts

		Trust Contract		Bonus Contract		Revenue Sharing	
		Av. Profit	SD	Av. Profit	SD	Av. Profit	SD
Exogenously determined	Principal	3058 (46%)	720	3657 (51%)	981	4206 (53%)	757
	Agent	3618 (54%)	500	3505 (49%)	533	3741 (47%)	467
	Total	6675 (100%)	887	7162 (100%)	1086	7947 (100%)	862
TBR	Principal	2700 (44%)	173	3582 (48%)	1205	4269 (53%)	577
	Agent	3496 (56%)	3	3663 (52%)	542	3806 (47%)	410
	Total	6196 (100%)	170	7245 (100%)	1190	8075 (100%)	730
TBR-r	Principal	2875 (42%)	1076	3733 (49%)	988	4359 (54%)	651
	Agent	3849 (58%)	668	3755 (51%)	660	3786 (46%)	428
	Total	6725 (100%)	995	7489 (100%)	1136	8145 (100%)	768

Notes: TBR and TBR-r represent contract choice situations in a one-shot and repeated game, respectively. The overall profits were significantly higher in revenue sharing contracts than in trust contracts (Wilcoxon $p<0.001$, $p=0.011$, $p<0.001$ in relation to exogenous contracts, TBR and TBR-r, respectively) and bonus contracts (Wilcoxon $p<0.001$, $p=0.05$, $p<0.001$ in relation to exogenous contracts, TBR and TBR-r, respectively). Principals earn significantly more with revenue sharing contracts (with respect to trust contracts: Wilcoxon $p<0.001$, $p=0.011$, $p<0.001$ in relation to exogenous contracts, TBR and TBR-r respectively. With respect to bonus contracts: Wilcoxon $p=0.004$, $p=0.028$, $p<0.001$ in relation to exogenous contracts, TBR and TBR-r respectively). The agents' profits are larger in RSC than in other contracts when it is exogenously imposed (BC<->RSC: $p=0.005$ and TC<->RSC: $p=0.078$), but this is not the case for TBR (BC<->RSC: $p=0.508$ TC<->RSC: $p=0.036$) and TBR-r (BC<->RSC: $p=0.551$, TC<->RSC: $p=0.432$). In RSC agents are almost no worse off with respect to trust contracts: Wilcoxon $p=0.078$, $p=0.036$, $p=0.432$ in relation to exogenous contracts, TBR and TBR-r respectively; with respect to bonus contracts: Wilcoxon $p=0.005$, $p=0.508$, $p=0.551$ in relation to exogenous contracts, TBR and TBR-r respectively).